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B105/B201

26.2521  
AUTHORS:

Stetsenko A. I., Tverdovskiy I. P.

TITLE:

Overvoltage of hydrogen formation on disperse Pd - Pt and  
Pd - Rh alloys

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 13, 1961, 87, abstract  
13E663 (Sb. tr. Gos. in-ta prikl. khimii, 1960. vyp. 46,  
221-228)

TEXT: With the aid of a previously described method (RZhKhim, 1960, No. 15, 60716; 60717) it was shown that, unlike what is the case with Pt, the overvoltage of hydrogen formation on disperse Pd depends largely on the pH value. For the Pd electrode, the transition of 1 n  $H_2SO_4$  to 2 n NaOH is accompanied by an increase of the absolute value of  $\eta$  and by an increase of the coefficient b of Tafel's equation from 0.020 to 0.152 v. Dissolution of Pt or Rh in Pd results in a rapid decrease of the value of  $\eta$  in alkaline solutions. An addition of 25% of Pt to Pd lowers  $\eta$  to values obtained on pure Pt. For Pd - Rh alloys,  $\eta$  is rendered independent of the composition by adding ~40% of Rh. It was shown that the change of  $\eta$  and

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Overvoltage of hydrogen formation on ...

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of the solubility of hydrogen are qualitatively similar functions of the composition of the systems investigated (Stetsenko A. I., Tverdovskiy I. P. "Zh. fiz. khim.", 1951, 26, 647; "Dokl. AN SSSR", 1952, 84, 997). Various assumptions were made concerning the possible causes of the decrease of  $\eta$  as a function of the composition of the alloy. [Abstracter's note: Complete translation.]

Card 2/2

GRINBERG, A.A.; ST. N. N., A.I.

Acid-base properties of cis and trans isomers of  $[Pt(NH_3)_2(NH_2OH)_2]Cl_2$ .  
Zhur. neor. . 1961. 6 no.1:111-119 no.1: '61. (Pt-A 14:1)  
(Platinum compounds)

STETSSENKO, A.I.

Method for preparing Alexander base  $[\text{Pt}(\text{NH}_2\text{OH})_4](\text{OH})_2$  and Lössen  
chloride  $[\text{Pt}(\text{NH}_2\text{OH})_4]\text{Cl}_2$ . Zhur.neorg.khim. 6 no.8:1769-1770  
Ag '61. (MIRA 14:8)

(Platinum compounds)

GRINBERG, A.A., akademik; STETSENKO, A.I.; IN'KOVA, Ye.N.

Acidic properties of cis- and trans-isomers of  $[\text{Pt}(\text{glh})_2(\text{NH}_3)_2] \text{Cl}_2$ .  
Dokl. AN SSSR 136 no.4:821-823 F '61. (MIRA 14:1)

1. Leningradskiy tekhnologicheskii institut imeni Lensoveta.  
(Platinum compounds)

GRINBERG, A.A.; STETSENKO, A.I.

Acidic properties of cis- and trans-isomers of  $[\text{Pt}(\text{NH}_2\text{OH})_2(\text{Py})_2]\text{Cl}_2$ .  
Zhur.neorg.khim. 7 no.12:2678-2684 D '62. (MIRA 16:2)  
(Platinum compounds) (Isomerization)

L 12648-63 BDS/EWP(q)/EWT(m) AFFTC/ASD JD/HW-2  
 ACCESSION NR: AP3002699 S/0060/63/036/005/1040/1045

AUTHOR: Tverdovskiy, I. P.; Vert, Zh. L.; Karpova, R. A.; Mosevich, I. A. and Stetsenko, A. I.

TITLE: Electrochemical extraction of dispersed binary alloys of palladium with metals of groups 8 and 1B

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 5, 1983, 1040-1045

TOPIC TAGS: palladium, binary alloy, Pt, Rh, Au, Ni, Cu, Co, Fe

ABSTRACT: In examining the physico-chemical and catalytic properties of palladium-base binary alloys, electrolytic methods of extraction of mixed dispersed predipositions of systems Pd-Pt, Pd-Rh, Pd-Au were used. Abnormal results were obtained only for the system Pd-Ni, when the introduction of nickel in palladium at 30-35% was not accompanied by a change in lattice constant. In the zone of richer nickel the sizes of the elementary cell of dispersed alloys coincided approximately with parameters of the compact forms according to data of Hultgren and Zapfe (Trans. A.I.M.E. 133, 1939, 58). Use of solutions on the basis of nitrite group of palladium permitted extracting alloys Pd-Cu, Pd-Ni, Pd-Co and Pd-Fe not only by joint electrolysis, but also by chemical precipitation by means of reduction of metal ions by formate or sodium hypophosphite, hydrazine salts, etc. Orig. art. has: Card 1/2/

Association: St. Inst. of Applied Chemistry







STETSSENKO, A.K., inzhener; DANILOV, V.I., inzhener.

Dry nitrogen used for protection of machines and instruments.  
Vest.mash. 37 no.6:32-33 Je '57. (MIRA 10:7)  
(Protective atmospheres) (Nitrogen)

TAYTS, N.Yu.; TREGUBOV, V.V.; STEFSENKO, A.M.; MELOV, I.I.; ZELENSKY, V.D.

Scale formation during the heating of wheels in heat treating  
ring furnaces. Izv.vys.ucheb.zav.; Chern.Met. 8 no.6:159-162  
'65. (MIRA 18:8)

1. Dnepropetrovskiy Metallurgicheskiy institut.

ZVYAGINTSEV, A.F.; IVANOV, Yu.N.; KAZAKOV, V.E.; STETSENKO, A.M.;  
SOLOMOVICH, M.Ya.; KORZH, V.I.; DASHKEVICH, A.A.; Prinimali  
uchastiye: LIPTSEN, S.Kh.; RYZHIKOV, A.P.; STAL'NOKRITSKIY,  
V.N.; LEVENETS, L.Ye.; MOGILA, V.A.; KOVAL', A.A.; VLASOV, V.F.;  
ROSHCHIN, A.G.; RAYKO, V.P.; KORNIYENKO, V.G.; PANTYUSHKIN, N.V.

Investigating the possibility of manufacturing all-rolled  
electric locomotive wheels with existing equipment. Kuz.-shtam.  
proizv. 5 no.11:11-14 N '63.

(MIRA 17:1)

L 13852-65 ENT(m)/EMP(t)/EMP(b) Pad IJP(c) JD/HM  
ACCESSION NR: AP4048779 S/0126/64/018/004/0632/0634

AUTHOR: Palatnik, L. S.; Ravlik, A. G.; Stetsenko, A. N.

TITLE: On phase composition of vacuum condensates of cobalt

SOURCE: Fizika metallov i metallovedeniye , v. 18, no. 4, 1984, 632-634

TOPIC TAGS: phase composition, cobalt, vacuum cobalt deposition, alpha cobalt, beta cobalt, polymorphic cobalt modification

ABSTRACT: The authors have experimentally investigated the influence of temperature and the nature of the substrate on the phase composition of vacuum deposited cobalt. The substrates (carbon film, condensate of NaCl, or glass) had a measured temperature gradient. The composition of the films was analyzed with the x-ray diffraction method. It was found that of lower temperatures (in the 20 to 200 C range) the  $\alpha$  Co is formed (hexagonal closely packed lattice), and at higher temperatures (200 to 450 C)- the  $\alpha$  Co is formed (cubic face centered lattice). It is possible that  $\beta$ -phase which is formed at lower temperatures is

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ACCESSION NR: AP4048779

transformed into  $\alpha$ -phase through the action of dislocation centers. This transformation is impeded at higher temperatures. Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina (Khar'kov Polytechnic Institute)

SUBMITTED: 02Aug63

ENCL: 00

SUB CODE: MM , SS

NR REF SOV: 008

OTHER: 007

  
Card 2/2

STETSENKO, A. V.

Dissertation: "Cyanine Dyes Containing Quinone Nuclei." Cand Chem Sci, Kiev State U, Kiev, 1953

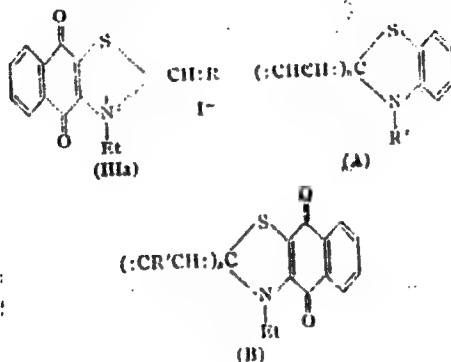
W-30928

SO: Referativnyi Zhurnal, No 5, Dec 1953, Moscow, AN USSR (N-~~27755~~)

STETSENKO, A. V.

USSR

Cyanine dyes from 2-methylnaphthoquinonothiazole.  
A. I. Klyuchnikov and A. V. Stetsenko. *Ukrain. Khim. Zhur.*  
19, 608-10 (1971); *Russk. Khim. Zhur.* 1974, No. 19430.  
2-Methylnaphthoquinonothiazole (I) and 2-methylnaphtho-  
quinono[2,3-d]thiazole (II) were synthesized in order to  
obtain a dye contg. a quinone residue in its mol. I and II are  
weak bases forming no quaternary salts with dialkyl sulfates





and *p*-toluenesulfonates.  $\Pi \cdot \text{EtCl}$  (III) was synthesized as are similar salts of benzthiazole. Boiling III in alc. converted it into a methylene base. From III were obtained the following IIa (R given): A ( $n = 0$ ,  $R' = \text{Me}$ ) (IV), ( $n = 1$ ,  $R' = \text{H}$ ) (V), B ( $n = 1$ ,  $R' = \text{Me}$ ) (VI), A ( $n = 1$ ,  $R' = \text{Et}$ ) (VII), 3-[1-methyl-3(1H)-quinolylidene]ethylidene (VIII), B ( $n = 2$ ,  $R' = \text{H}$ ) (IX), and  $p\text{-Me}_2\text{NC}_6\text{H}_4\text{CH}_2$  (X). Heptamethinecyanine could not be isolated. The basicity of V was 1.32 moles/l., while the basicity of diethylcarbocyanine was 2.64 moles/l. (The basicity is referred to as the concn. of  $\text{HCl}$  in a mixt. of 15 ml. alc. and 10 ml.  $\text{H}_2\text{O}$  required to reduce by half the color of the dye dissolved in this mixt.) All the naphthoquinonothiazoles absorb at longer wavelengths than the derivs. of naphtho[2,3-*d*]thiazole, except VII, in which a hypsochrome shift of 5.5  $\text{m}\mu$  is caused by a difference in the basicity of the heterocycles. A still greater difference in the basicity of heterocycles and consequently a greater hypsochrome shift is found in VIII in which case it is 18  $\text{m}\mu$ . Nitration of dimethyl ether of hydroquinone in glacial  $\text{AcOH}$  yielded the mono- $\text{HCl}$  deriv. (XI),  $m. 71^\circ$ . XI was reduced by  $\text{SnCl}_2$  and  $\text{H}_2\text{N}$  to aminodimethylhydroquinone (XII),  $m. 81^\circ$ .

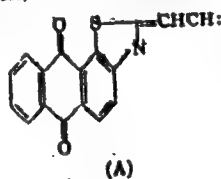
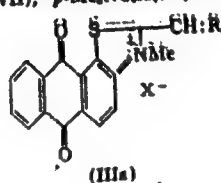
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Its Ac deriv., m. 91°, was fused on a water bath with P<sub>2</sub>S<sub>5</sub>, leached with an 8% NaOH soln.; CO<sub>2</sub> pptd. N-thioacetyl deriv. (XIII), m. 88°. XIII oxidized by K<sub>2</sub>[Fe(CN)<sub>6</sub>] gave 2-methyl-4,7-dimethoxybenzothiazole (XIV), m. 101°. Boiling XIV in 65% H<sub>2</sub>SO<sub>4</sub> saponified the methoxy groups, giving 2-methyl-4,7-dihydroxybenzothiazole (XV), m. 92°. XV (0.5 g.) dissolved in 150 ml. of 83% H<sub>2</sub>SO<sub>4</sub> and to it added dropwise 2.5 g. K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> in 100 ml. H<sub>2</sub>O, gave 50% I, m. 189°. Sulfonation at 80° converted α-naphthol into "α-naphtholsulfonic acid" from which by the action of HCl and KClO<sub>4</sub> was obtained 2,3-dichloro-1,4-naphthoquinone (XVI), m. 193°. To XVI dissolved in alc. was dropwise added concd. NH<sub>4</sub>OH. Boiling for 1 hr. produced 2-chloro-3-amino-1,4-naphthoquinone (XVII), m. 190°. XVII (1 g.) dissolved in 10 ml. of alc., to it added 1.15 g. Na<sub>2</sub>S in 3 ml. of H<sub>2</sub>O, the mixt. boiled for 30 min., filtered, and the ppt. boiled in 5 ml. of Ac<sub>2</sub>O yielded 38% II, m. 190°. II was also produced from the Ac deriv. of XVII, m. 219°, by dissolving 1 g. of the substance in 80 ml. of alc., adding 0.35 g. of anhyd. Na<sub>2</sub>S, boiling 4 hrs., distg. off 50 ml. of alc., diss. the residue with H<sub>2</sub>O, filtering, acidifying with dil. HCl, and removing pptd. II. Adding 8 ml. of a 33% alc. soln. of EtNH<sub>2</sub> to a boiling soln. of 5 g. XVI in 20 ml. alc., and cooling the mixt. produced 100% 2-chloro-3-ethylamino-1,4-naphthoquinone (XVIII), m. 116°. XVIII was transformed into III by 2 methods: (a) 1.1 g. of XVIII, 1.3 g. Na<sub>2</sub>S, and 12 ml. of H<sub>2</sub>O was boiled for 25 min., 20 ml. C<sub>6</sub>H<sub>6</sub> added, the mixt. acidified with AcOH, shaken, the C<sub>6</sub>H<sub>6</sub> layer sepd., dried over Na<sub>2</sub>SO<sub>4</sub>, and treated with 1 g. of AcCl in 5 ml. C<sub>6</sub>H<sub>6</sub> to yield III, m. 248° (decompn.), purified by 2 reprecipns. with ether from alc. (yield 13%); (b) 5 g.

STETSENKO, A.V.

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Cyanine dyes from 2-methylantraquinone thiazole.  
A. I. Kiprianov and A. V. Stetsenko. *Ukrain. Khim. Zhurn.* 19, 517-22 (1953); *Russk. Khim.* 1954, No. 19837. — 2-Methylantraquinone[1,2-d]thiazole (I), 1-MeCl (II), and 1-MeI (IIa) were synthesized; II and IIa isomerized to methylene bases (III). I is a weak base, but stronger than 2-methylbenzoquinonothiazole and 2-methylnaphthoquinono[2,3-d]thiazole (cf. preceding abstr.). From II were obtained the following IIIa (R and X given): A, Cl (IV); 2-[1-methyl-2(1H)-quinolyldene]ethylidene, I (V); 3-methyl-2-benzothiazolinyldene, Cl (VI);  $p\text{-Me}_2\text{NC}_6\text{H}_4\text{CH}_2$ , I (VII);  $p\text{-Me}_2\text{NC}_6\text{H}_4\text{N}$ , I (VIII). These dyes absorb at



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longer wave lengths than do the dyes derived from anthra-thiazide. The greater basicity of I as compared with 2-methylanthraquinonethiazole is confirmed also by a comparison of the hypsochromic shift of V (2.5 m $\mu$ ) with that characteristic of dyes having naphthoquinonethiazole and quinoline nuclei in the mol. (18 m $\mu$ ). From 3-chloroanthra-quinone and 25% NH<sub>3</sub> kept 4 hrs. in an autoclave at 210° was obtained 2-aminoanthraquinone (IX), m. 301° (cf. Voronilov and Sukitin, C.A. 32, 539<sup>a</sup>). IX was acetylated by the action of Ac<sub>2</sub>O and chlorinated (Jungblans, C.A. 7, 3743). The 1-chloro-3-acetamidoanthraquinone, m. 241-2°, thus obtained, was saponified with 5% KOH, thereby producing 1-chloro-3-aminoanthraquinone (X), m. 230° (3 g.) dissolved in alc. and boiled for 1 hr. with 4 g. NaOH and 1 g. S in 4 ml. H<sub>2</sub>O produced 100% Na salt of 1-mercapto-3-aminoanthraquinone (XI), m. 257° (0.76 g.) and 0.8 g. Me<sub>2</sub>SO, heated 30 min. at 100-5°, the product treated with C<sub>6</sub>H<sub>6</sub> and ether and dissolved in H<sub>2</sub>O, the solution treated with C and filtered, KCl added to the filtrate, produced 53% II, m. 223°. IIa m. 230° (decompn.). II (0.6 g.), 0.3 g. NaOH in 5 ml. H<sub>2</sub>O and 30 ml. Me<sub>2</sub>CO, shaken 10 min., filtered, and the filtrate dild. with H<sub>2</sub>O gave 84% III, m. 173°. Heating III with dil. HCl produced II. II (0.33 g.), 0.33 g. orthonitric ester, and 2 ml. Ac<sub>2</sub>O boiled 45 min. gave 79% IV, m. 346-8° (decompn.).  $\lambda_{\text{max}}$  646 m $\mu$  (in AcOH). II (0.33 g.), 0.43 g. 2-acetylthioanthraquinone (line-Mel) and 0.3 g. anhyd. NaOAc, heated 15 min. with 2 ml. Ac<sub>2</sub>O at 100° gave 60% V, m. 283-4° (decompn.).  $\lambda_{\text{max}}$  620 m $\mu$  (in alc.). II (0.66 g.), 0.62 g. 2-methylmercapto-benzothiazole-Me<sub>2</sub>SO, 0.22 g. anhyd. Na acetate, and 6 ml. abs. alc. boiled 1 hr. gave 14% VI, m. 213° (decompn.). II (0.33 g.) and 0.15 g. p-Me<sub>2</sub>NCH<sub>2</sub>CHO in Ac<sub>2</sub>O, and replacement of Cl by iodine with KI gave 36% VII, m. 249° (decompn.).  $\lambda_{\text{max}}$  589 m $\mu$  (in alc.). II (0.33 g.), 0.15 g. p-Me<sub>2</sub>NCH<sub>2</sub>NO, and 2 ml. abs. alc. boiled 60 min. gave 45% VIII, m. 186° (decompn.).  $\lambda_{\text{max}}$  620 m $\mu$  (in alc.). M. Hoch.

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STETSENKO, A. V.

Reaction of methylene bases of nitrogen heterocycles with g.  $R_2CO$ , 2 ml.  $H_2O$ , and 10 ml.  $CaH_2$ , shaken, and the sep. liquid. A. I. Kishchuk and A. V. Stetsenko (Kiev org. layer treated with 0.21 g. *p*-benzoquinone in  $CaH_2$  and 10 ml.  $H_2O$ ; *Zhur. Obshch. Khim.* 23, 1012-21 (1953); shaken 1 hr. gave 14% 2-(3-methyl-2-benzothiazolylidene)-1,4-naphthoquinone, violet, m. 237° (from  $CHCl_3$ ), absorption max. 580 mμ in  $CHCl_3$ , 550 in EtOH-HCl. Similarly, with methylene bases of N heterocycles. The absorption bands of all these dyes are not sharp and the maxima below are rather broad. The max. shift to longer waves when the solvent is changed to one of lower dielectric constant. The products form salts, which are readily reduced to colorless substances, forming corresponding derivs. of hydroquinone, which have the properties of vat dyes, since they develop color on exposure to air. Chlorination of 1,2-naphthoquinone in AcOH gave 3-chloro-1,2-naphthoquinone (I), m. 173°, red needles. 1-Naphthosulfonic acid treated with  $KClO_4$  and HCl gave 2,3-dichloro-1,4-naphthoquinone (II), yellow, m. 193°. 2-Methylbenzothiazole of 2-methylbenzothiazole methyl methanesulfate with H

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 J. Z. Kiprianov

give 41% 2-(3-methyl-2-benzothiazolylidenemethyl)-4-chloro-1,4-naphthoquinone, blue, m. 194° (from CHCl<sub>3</sub>), absorption max. 670 in EtOH, 640 mμ in CHCl<sub>3</sub>; perchlorate, yellow, m. 233-4° (from abs. EtOH). Similarly the reaction with 1,2-naphthoquinone gave 32% 4-(3-methyl-2-benzothiazolylidenemethyl)-1,2-naphthoquinone, blue, m. 227°, absorption max. 640 in EtOH, 620 in CHCl<sub>3</sub>, 430 mμ in EtOH-HCl. The reaction with 1 similarly gave 33% 4-(3-methyl-2-benzothiazolylidenemethyl)-3-chloro-1,2-naphthoquinone, m. 161° (from CHCl<sub>3</sub>), absorption max. 630 in EtOH, 645 mμ in CHCl<sub>3</sub>, 420 in EtOH-HCl. Similarly 2-methyl-4,7-benzothiazolequinone gave 50% blue 3-(3-methyl-2-benzothiazolylidenemethyl)-2-methyl-4,7-benzothiazolequinone, m. 234-5° (from C<sub>6</sub>H<sub>6</sub>), absorption max. 680 mμ in CHCl<sub>3</sub>. Similar reaction of 2-methyl-6-nitrobenzothiazole ethiodide and 1,4-naphthoquinone gave 22% 2-(3-ethyl-6-nitro-2-benzothiazolylidenemethyl)-1,4-naphthoquinone, red, m. 334°, absorption max. 569 mμ in CHCl<sub>3</sub>. 2-Methyl-6-dimethylaminobenzothiazole methiodide and 1,4-naphthoquinone gave 26% green 2-(3-methyl-6-dimethylaminobenzothiazolylidenemethyl)-1,4-naphthoquinone, m. 210° (from C<sub>6</sub>H<sub>6</sub>), absorption max. 671 in EtOH, 650 in CHCl<sub>3</sub>, 620 mμ in EtOH-HCl. 1,4-Naphthoquinone and 2-methylbenzoxazole methyl methosulfate gave 36% blue 2-(3-methylbenzoxazolylidenemethyl)-1,4-naphthoquinone, decamp. 172°, absorption max. 610 in EtOH, 630 in CHCl<sub>3</sub>, 580 mμ in EtOH-HCl. 2-Methyl-6,7-benzobenzothiazole methyl methosulfate and 1,4-benzoxquinone gave 32% violet 2-(3-methyl-6,7-benzo-2-benzothiazolylidenemethyl)-1,4-benzoxquinone, decamp. 209°, absorption max. 620 mμ in CHCl<sub>3</sub>. The use of 1,4-naphthoquinone similarly gave 44% blue 2-(3-methyl-6,7-benzo-2-benzothiazolylidenemethyl)-1,4-naphthoquinone, m. 218°, absorption max. 640 in EtOH, 630 in CHCl<sub>3</sub>, 581 mμ in EtOH-HCl. Quinaldine methyl methosulfate and 1,4-benzoxquinone gave 17% blue 2-(1-methyl-2-quinolylidenemethyl)-1,4-benzoxquinone, decamp. 160°, absorption max. 600 mμ in CHCl<sub>3</sub>. 1,4-Naphthoquinone in this case gave 20% violet 2-(1-methyl-2-quinolylidenemethyl)-1,4-naphthoquinone, m. 178°, absorption max. 670 in EtOH, 650 in CHCl<sub>3</sub>, 600 mμ in EtOH-HCl; perchlorate, red, decamp. 207° (from EtOH).  
 G. M. Kozlov

USHENKO, I.K.; STETSSENKO, A.V.; RUBTSOVA, Ye.N.

Investigations in the chemistry of cyanine dyes. Part 8. 3,3'-diaryl-6,7,6',7',-dibenzothiacyanines. Ukr.khim.zhur. 20 no.5: 530-534 '54. (MIRA 8:1)

1. Institut organicheskoy khimii Akademii nauk USSR.  
(Thiacyanines)

STETSENKO, A.V.

*These*  
*Chem* Cyanine dyes from the isomeric dimethylthiazolobenzothiazoles. A. I. Kiprianov, A. V. Stetsenko, and E. D. Sych. *Ukrain. Khim. Zhur.* 22, 760-763 (1977) (in Russian); cf. *C.A.* 51, 372g. — The following  $R(CH:CH)_2CH:R$  isomers are reported ( $R', R''$ , s, m.p., and  $\lambda$  in mμ given): 3-ethyl-6-methyl-2-benzo[1,2,4,5]bisthiazolyl (I), 3-ethyl-2-benzothiazolylidene (II), 0, 373°, 440; I, 1-ethyl-2(1H)-quinolylidene (III), 0, —, 495; I, 3-ethyl-6-methyl-2-benzo[1,2,4,5]bisthiazolylidene (IV), 1, 267°, 585; I, 3-methyl-2-benzoxazolylidene, 1, 260°, 535; I, II, 1, 251°, 576; I, 3-ethyl-2-naphtho[2,1]thiazolylidene, 1, 263°, 588; I, III, 1, 264°, 590; I, IV, 2, 213°, 680; I,  $p-Me, NC_6H_4CH:$  (V), 0, 234°, 545; 3-ethyl-6-methyl-2-benzo[1,2,6,4]bisthiazolyl (VI), 3-Me analog of II, 0, 293-4°, 432; VI, 3-ethyl-6-methyl-2-benzo[1,2,6,4]bisthiazolylidene (VII), 1 (VIII), 270°, 576; VI, VII, 2, 245°, 670; VI, VII, 3, 212°, 784; VI, 3-ethyl-5-phenyl-2-benzothiazolylidene, 1, 376°, 588; VI, 3-ethyl-5-phenyl-2-thyl-2-benzothiazolylidene, 1, 256°, 585; VI, 3-ethyl-2-naphth[2,1]oxazolylidene, 1, 273°, 514; VI, II, 1, 273°, 570; VI, 1-ethyl-2-naphtho[1,2]thiazolylidene, 1, 256°, 588; VI, III, 1, 280°, 586; VI, V, 0, 255°, 540. VIII methylated at the central methine group gave a compd., m. 287°,  $\lambda$  550 mμ; Et analog, m. 207°,  $\lambda$  545 mμ. 3,7-Diethyl-2,6-bis(2- $p$ -dimethylaminophenylvinyl)benzo[1,2,4,5]bisthiazolium diiodate (IX), m. 243°,  $\lambda$  612 mμ. The benzo[1,2,4,5]bisthiazole (X) derivs. have  $\lambda$  5-10 mμ greater than the isomeric benzo[1,2,6,4]bisthiazole derivs.; the latter, however, are obtained usually in better yields. Isomers of IX

*1/3*



or of the centrally alkylated derivs. of VIII were not obtained in the X series. 2-Methyl-6-acetamidobenzothiazole and P<sub>2</sub>S<sub>5</sub> at 130-5° in PhMe form the thioacetamido compd., m. 208°, which with K<sub>2</sub>Fe(CN)<sub>6</sub> in alk. aq. EtOH soln. yields 2,6-dimethylbenzo[1,2,4,5]bisthiazole (XI), m. 121°. XI and p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>Et form a mono-Et deriv. in 3 hrs. at 130° and a di-Et deriv. (isolated as the iodide, m. 239°) on heating 13 hrs. at 130° and 1 hr. at 150°. 2,6-Dimethylbenzo[1,2,5,4]bisthiazole methiodide, m. 235°; ethiodide, m. 238°. 2,6-Dimethylbenzo[1,2,5,4]bisthiazole Et p-toluenesulfonate and PhN:CHNHPh in C<sub>6</sub>H<sub>6</sub>N form RCH:CHNH(Ph.HO<sub>2</sub>SC<sub>6</sub>H<sub>4</sub>Me-p (R = I), m. 259°. Cyanine dyes from the isomeric pyridothiazoles. S. G. Fridman and A. I. Kirilov. *Ibid.* 767-71.—The following R'(CH:CH):CH:R''xX are reported (R', R'', n, x, X, m.p., and λ in mμ given): 1,4-dimethyl-2-thiazolo[5,4-b]pyridyl (XII), 1,4-dimethyl-2(1H)-thiazolo[5,4-b]pyridylidene, I, 3, 1<sup>-</sup>, 288°, 570; XII, V, 0, 2, ClO<sub>4</sub><sup>-</sup>, —, 585; 3,5-dimethyl-2-thiazolo[4,5-c]pyridyl (XIII), Me analog of II, 0, 2, 1<sup>-</sup>, 291° (1 H<sub>2</sub>O), 419 (423 in alc.); XIII, 3,5-dimethyl-2(3H)-thiazolo[4,5-c]pyridylidene (XIV), I, 3, 1<sup>-</sup>, 256° (2 H<sub>2</sub>O), 542;

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*Reptianov, A. I., Stetsenko, A. V., Lych, E. D.*

XIII, V, O, 2, 1<sup>-</sup>, 220-5° (3 H<sub>2</sub>O), 669 (in alc.); 5-acetamido-3-methyl-2-thiazolo[4,5-b]pyridyl, 5-acetamido-3-methyl-2-(3H)-thiazolo[4,5-b]pyridylidene, 1, 1, Br<sup>-</sup> (XV), 279-3° 685 (in alc.); 5-acetamido-3,4-dimethyl-2-thiazolo[4,5-b]pyridyl (XVI), 5-acetamido-3,4-dimethyl-2-(3H)-thiazolo[4,5-b]pyridylidene, 1, 3, ClO<sub>4</sub><sup>-</sup>, 270°, 662 (665 in alc.); XVI, V, O, 2, ClO<sub>4</sub><sup>-</sup>, 234°, 669. The centrally ethylated XV m. 253-6°, λ 670 in alc. R'<sup>1</sup>CH:CHCMe:CHCH:R'' (R' = XIII, R'' = XIV), m. 235°, λ 640. 3-Methylthiazolo[5,4-b]pyridine bis(etho-p-toluenesulfonate), m. 183-4°. The monoethyl p-toluenesulfonate of 2-methylthiazolo[4,5-c]pyridine, m. 137°, does not give a cyanine dye and so the Et is presumably on the pyridine and not the thiazole N atom. The bis(Me methosulfate) H<sub>2</sub>O, m. 72-3°, is dye-forming. 5-Acetamido-2,3,4-trimethylthiazolo[4,5-b]pyridinium bis(methosulfate), m. 172-6°. 5-Acetamido-2,3-dimethylthiazolo[4,5-b]pyridinium o-nitrobenzene-sulfonate, m. 236-41°. Cyanine dyes of the naphthodithiazole series. A. V. Stetsenko and V. I. Ivanov (T. O. Shevchenko State Univ., Kiev). *Ibid.* 772-6. The following R'(CH:CH).CH:R'' iodides are reported (R', R'', m.p., and λ in mμ given): 3,7-dimethyl-2-naphtho[1,2,5,6]-bisthiazolyl (XVII), Me analog of II, O, 330-40°, 446; XVII, 3,7-dimethyl-2-naphtho[1,2,5,6]bisthiazolylidene, 1, 247°, 600; XVII, II, 1, 210°, 686; XVII, Me analog of II, 1, 207°, 645; XVII, 3-ethyl-2-naphtho[2,1]thiazolylidene, 1, 181°, 608; XVII, V, O, 241-2°, 635. 1,6-(AcNH).C<sub>10</sub>H<sub>6</sub>, m. 300°, and P<sub>2</sub>S<sub>5</sub> form the thioacetamido compd., m. 149°, converted by K<sub>2</sub>Fe(CN)<sub>6</sub> in alk. soln. to 2,7-dimethyl-naphtho[1,2,5,6]bisthiazole, m. 272° (metalloidic, m. 270°).

John Howe Scott

3/3

STEPISENKO, A.V.; IVANOVA, V.I.

Cyanine dyes of the naphthodithiazole series. Ukr.khim.zhur. 22  
no.6:772-775 '56. (MLRA 10:7)

1. Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko,  
kafedra organicheskoy khimii.  
(Cyanine dyes)

STETSENKO, Aleksey Vasil'yevich [Stetsenko, O.V.], kand.khim.nauk; POCHINKO, V.Ia. [Pochynko, V.Ia.], kand.khim.nauk, red.; TEPLIAKOVA, A.S. [Tepliskova, A.S.], red.

[High molecular weight compounds and their importance for the national economy] Vysokomolekuliarni spoluky ta ikh znachennia dlia narodnoho hospodarstva. Kyiv, 1958. 30 p. (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan' URSR. Ser.4, no.11) (Gums and resins, Synthetic) (Polymers) (MIRA 12:2)

-MIKHNOVSKAYA, N.D.; ROTMISTROV, M.N., doktor biologicheskikh nauk;  
STETSSENKO, A.V., kand. khim. nauk; KULIK, G.V.

Studying the fungicidal properties of chlorine derivatives of  
salicylanilide and carvacrol. Dokl. akad. sel'khoz. 23 no.9:35-38  
'58. (MIRA 11:10)

1.Kiyevskiy gosudarstvennyy universitet imeni T.G. Shevchenko. ,  
Predstavlena akademikom S.N. Murenstsevim.  
(Fungicides) (Salicylanilides) (Carvacrol)

STETSENKO, A.V.; KURBATOVA, A.D.

Cyanine dyes of 2-methylacenaphthothiazole. Ukr. khim. zhur.  
24 no.3:354-357 '58. (MIRA 11:9)

1.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko, kafedra  
organicheskoy khimii.  
(Dyes and dyeing) (Naphthothiazole)

ROTMISTROV, M.N. [Rotmistrov, M.M.]; STETSENKO, A.V. [Stetsenko, G.V.]; KULIK, G.V.  
[Kulyk, H.V.]; VASILEVSKAYA, I.A. [Vasylevs'ka, I.O.]; KHARCHENKO, S.N.  
[Kharchenko, S.M.]

Study of new synthetic antimicrobial substances. Mikrobiol.  
zhur. 21 no.3:31-35 '59. (MIRA 12:10)

1. Z kafedri mikrobiologii Kiivs'kogo derzhavnogo universitetu.  
(SALICYLIC ACID rel cpds)  
(ANTIBIOTICS chem)

S/073/60/026/001/014/021  
B004/B054

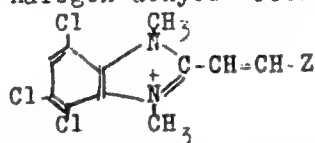
AUTHORS: Stetsenko, A. V. and Bogodist, Yu. I.

TITLE: Cyanine Dyes From 2-Methyl-4,5,7-trichlorobenzimidazole

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 1.  
pp 92-95

TEXT: The authors report on the synthesis of imido carbocyanines containing three chlorine atoms on the benzimidazole radical. They proceeded from 2-methyl-4,5,7-trichlorobenzimidazole. The latter was converted to the quaternary salts of 1,2-dimethyl-4,5,7-benzimidazole by means of dialkyl sulfates or halogen alkyls. From these salts, six dyes of the

general structure



were synthesized. The authors

determined the absorption maxima, and calculated the hypsochromic shift according to A. I. Kiprianov. The latter is defined as the difference

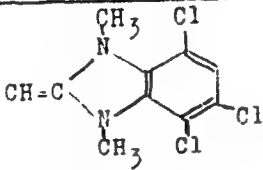
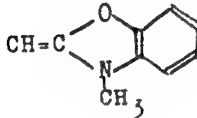
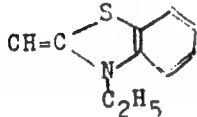
Card 1/4



Cyanine Dyes From 2-Methyl-4,5,7-trichloro-  
benzimidazole

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B004/B054

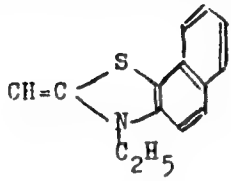
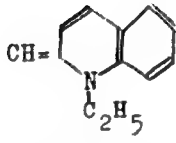

between the arithmetical mean of the absorption maxima of the two sym-  
metrical dyes synthesized from the same heterocycles, and the absorption  
maximum of the asymmetric dye. Table 1 gives these data

Dye	Z=	$\lambda_{max}, m\mu$	hypsochromic shift $m$
I		520	
II		480	22.5
III		514	

Card 2/4

Cyanine Dyes From 2-Methyl-4,5,7-trichloro-  
benzimidazole

S/073/60/026/001/014/021  
B004/B054

Dye	Z=	$\lambda_{\max}$ , m $\mu$	hypsochromic shift m
IV		536	22.5
V		557	5.5
VI		435	

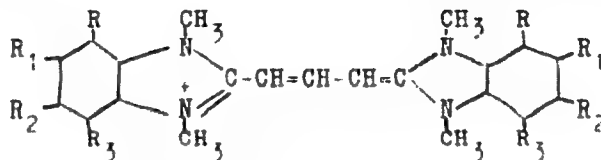
Further, the authors determined the absorption maxima of the symmetrical imido carbocyanines with 2, 4, and 6 chlorine atoms. Table 2 indicates:

Card 3/4

Cyanine Dyes From 2-Methyl-4,5,7-trichloro  
benzimidazole

S/073/60/026/001/014/021  
B004/B054

general structure



Dye

substituents:

R	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
1	H	H	H
2	H	Cl	H
3	H	Cl	Cl
4	Cl	H	Cl

$\lambda_{\text{max}}, \text{m}\mu$

489  
507  
515  
520

There are 2 tables and 7 references: 4 Soviet, 2 US, 5 German, 2 French  
2 Italian, and 1 Swiss

ASSOCIATION: Kafedra organicheskoy khimii Kiyevskogo gosudarstvennogo  
universiteta im. T.G. Shevchenko (Department of Organic  
Chemistry of the Kiyev State University imeni T.G. Shevchenko)

SUBMITTED: October 25, 1958

Card 4/4

· ROTMISTROV, M.N.; STETSENKO, A.V.; KULIK, G.V.; VASILEVSKAYA, I.A.; BAYSHEVA,  
V.G.; GAMALEYA, N.F.

Antimicrobial properties of some acenaphthene derivatives, Mikro-  
biologiya 29 no.5:757-761 S-0 '60. (MIRA 13:11)

1. Kiyevskiy gosudarstvennyy universitet.  
(ACENAPHTHENE) (ANTISEPTICS)

STETSENKO, A.V.; CHERNYAVSKIY, G.V.

Cyanine dyes, derivatives of 2-methylantraquinon-(1', 2':5,4)-  
imidazole. Ukr.khim. zhur. 27 no.2:237-240 '61. (MIRA 14:3)

L.Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko, kafedra  
organicheskoy khimii.  
(Cyanine dyes)

STETSENKO, A.V.; LISHKO, V.K.

Imidocyanines containing electronegative substitutes. Ukr.khim.  
zhur. 28 no.2:218-222 '62. (MIRA 15:3)

1. Kiyevskiy gosudarstvennyy universitet im. T.G.Shevchenko.  
(Cyanines)

STETSENKO, A.V.; KRAVETS, L.I.

Cyanine dyes from 2-methylacenaphtheno-4',5' : 4,5-thiazole.  
Ukr. khim. zhur. 30 no.1:75-80 '64. (MIRA 17:6)

1. Kiyevskiy gosudarstvennyy universitet imeni Shevchenko.

STETSENKO, A.Ye.

Research work of a young institute. Tekst. prom. 25 no.12:88-89  
D '65. (MIPA 19:1)



STETSENKO, B.A.

Gaseous cyanidization in a continuous furnace. A. M. Tatarsky and B. A. Stetsenko. *Vestnik Mashinostroyeniya* 32, No. 12, 39-43 (1974). Gears made of 0.35% C, 0.63 Mn, 0.25 Si, 0.98 Cr steel were cyanided at 540-570°C in a stream of "pyrobenzol" vapors fed at a rate of 2 l./hr. and NH<sub>3</sub> introduced at a rate of 9 and 25 l./hr. A case 0.3-0.5 mm. thick was produced. Softer cases were formed at the 9 l./hr. rate. The C content remained 0.8-1.1% in both cases. Their wear resistance was much greater than of carburized and heat-treated Cr-Ni-Mn steel gears. J. D. Gat

STETSENKO, B. A.

USSR/Miscellaneous

Card 1/1 : Pub. 12 - 8/15

Authors : Tarasov, A. M., and Stetsenko, B. A.

Title : Use of kerosene as a carburizing agent for gaseous cementation

Periodical : Avt. trakt. prom. 2, 25-28, Feb 1954

Abstract : The use of lighting kerosene (standard GOST 4753-49) in the role of carburizing agent for gaseous cementation in continuous-operation furnaces, with direct feeding of the liquid carburizing medium and in shaft furnaces, is described. The strength of details cemented with lighting kerosene and pyro benzene, is identical. Methods of reducing the soot formation and improving the circulation of the carburizing agent between the treated details, are presented. Tables; graphs; drawings; illustrations.

Institution : The V. M. Molotov Automobile Plant, Gorkiy

Submitted : .....

SIETSENKO, B. A.

USSR/ Engineering - Metal hardening

Card : 1/1 Pub. 128 - 14/32

Authors : Tarasov, A. M. and Stetsenko, B. A.

Title : Hardening of metal by a diffusion process with high frequency heating of components.

Periodical : Vest. mash. 34/7, 50 - 52, July 1954

Abstract : Hardening of metal by gas diffusion with high frequency heating of components, is described. General information is given on diffusion processes, hardening, cyanization, temperatures, and types of steel. Illustrations; drawing.

Institution : ...

Submitted : ...

STETSENKO, B. A.

Mechanical Properties and Wear Resistance of Gas Cyanided  
Automobile Parts. A. M. Tarasov and B. A. Stetsenko.  
(*Automobil'naya i Traktornaya Promyshlennost*, 1955, (3),  
21-24). Gear teeth and rear axles are considered and cyaniding  
conditions are given and fatigue or static load tests tabulated.  
Hardness, case depth and ultimate breaking loads are shown  
and wear resistance measured. Gas and liquid cyaniding are  
compared. Safety precautions are mentioned.

Plp

STETSENKO, B.A.

USSR/ Engineering - Processing metal

Card 1/1 Pub. 128 - 22/35

Authors : Tarasov, A. M., and Stetsenko, B. A., Engineers

Title : Defects of cementation in a hard carbonizer

Periodical : Vest. mash. 35/3, 70 - 73, May 1955

Abstract : A description is given of experiments conducted in cementation in a hard carbonizer in place of gas cementation. The method of operation, materials used, temperatures applied, rates of heating and cooling and other points are examined as to their effect on the finished product. The disadvantages of the use of a hard carbonizer in place of gas are pointed out. Four USSR references (1949-1953). Illustrations; diagrams; graphs; table.

Institution : .....

Submitted : .....

STETSENKO, B.A.

USSR / Mechanical Properties of Crystals and Polycrystalline  
Compounds.

E-9

Abs Jour : Ref Zhur - Fizika, No 4, 1951, No 9462

Orig Pub : Stetsenko, B.A.

Inst : Gor'kiy Automobile Plant

Title : Causes of Formation of Irreversible Temper Brittleness

Orig Pub : Metallovedeniye i obrabotka metallov, 1956, No 7, 38-35

Abstract : The existing hypothesis explain the irreversible temper brittleness of hardened steel (a) by the decay of the residual austenite and (b) by the separation of disperse carbides. The author investigated the cause of temper brittleness of 40Kh steel (0.38 -- 0.43% C). Polished specimens 10 x 10 mm with a notch were quenched from 820° in oil, and then tempered in saltpeter bath in the 200 -- 550° range. Second hardening increase sharply the impact viscosity, although the zone of increased brittleness (275 -- 350°) remained. It is possible to assume that in

Card : 1/2

USSR / Mechanical Properties of Crystals and Polycrystalline  
Compounds.

E-9

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9462

Abstract : the 40Kh steel, as in the 20 KhNM steel, the amount of residual austenite after the second hardening decreases. This should influence the course of the curve of the impact viscosity towards increasing the interval of temper brittleness. The same effect should be seen in the increase of rate of cooling upon hardening. However, experiments have shown that cooling of water gives a more pronounced interval of increased temper brittleness. The results obtained show that the decay of the residual austenite in steels which are contained in an insignificant amount after hardening is not a principal factor causing the temper brittleness. The author believes a more acceptable cause to be the separation of dispersed carbides from the solid solution or the separation of compounds that reduce the impact viscosity of steel.

Card : 2/2

AUTHOR: Stetsenko, B.A., Engineer. 129-4-10/17

TITLE: On high speed heating during heat treatment. (O skorostnom  
magreve pri termicheskoy obrabotka.)

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and  
Metal Treatment) 1957, No. 4, pp. 47 - 50 (U.S.S.R.)

ABSTRACT: For studying the possibility of application of high  
speed heating during hardening and tempering of steel  
experiments were carried out involving heating of steel  
in ordinary furnaces, the temperature of which considerably  
exceeded the required temperatures. The effect was studied  
on cylindrical specimens consisting of fine grain 40X steel  
of 60 mm dia., 180 mm length, composition: 0.35-0.45% C,  
0.17 - 0.37% Si, 0.50 - 0.80% Mn, 0.80 - 1.10% Cr, max.  
0.40% Ni. For measuring the temperature one of the speci-  
mens was provided with a 10 mm dia. 90 mm deep hole into  
which a thermo-couple was inserted. The specimen with the  
thermo-couple was subjected to high speed heating at 1 000  
and 850 °C in an electrically-heated chamber furnace. The  
results are plotted in graphs and entered in a table. It  
can be seen from the curves, Fig. 1, that a temperature of  
870 °C in the core of the specimen is reached after 11 mins  
in the case of a furnace temperature of 1 000 °C and for a  
furnace temperature of 850 °C the core of the specimen is

Card 1/3



On high speed heating during heat treatment. (Cont.)  
129-4-10/17

heated to 540 °C in 8 mins. The properties are compared of specimens which were heated for 1 1/2 hours and hardened from 850 °C in oil, whereby one of the specimens was subsequently tempered for 1 1/2 hours at 540 °C, with specimens heated for 8 mins in a furnace of a temperature of 1 000 °C; in the latter case one of the specimens was tempered in a furnace at 850 °C for 11 mins. In the case of high speed heating the micro-structure of the surface zones of the hardened specimens consists of troostite-martensite and the core of sorbite and ferrite. High speed hardening followed by high speed tempering brought about a considerable improvement in the impact strength of the steel. It is concluded that high speed heating enables to reduce considerably the duration of heat treatment and to improve the strength of the steel. During rapid heating it is very difficult to control the temperature of the furnace and of the components pyrometrically; the temperature of the components increases rapidly and for ensuring uniform heating and preventing over-heating of the steel the heating has to be stopped in time. In flow production processes such heat treatment can be effected in automated high

Card 2/3

AUTHOR: Stetsenko, B.A.

129-10-10/12

TITLE: On industrial utilisation of gas cyaniding. (O promy-shlennom primeneniі gazovogo tsianirovaniya)

PERIODICAL: "Metallovedeniye i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.10, pp. 43-48 (U.S.S.R.)

ABSTRACT: All the gear box gears produced by the Gorki Automobile Works are made of 40X steel containing 0.38 - 0.43 and 0.36 - 0.41% C and subjected to liquid cyaniding to a depth of 0.18 and 0.25 mm, followed directly by hardening in oil. These gears proved satisfactory in service and technologically. A more progressive method is gas cyaniding; it ensures good properties of surface-hardened components, as was confirmed by comparative fatigue tests with gear boxes of the Pobeda car which were cyanided in a gaseous medium and in a liquid medium to a depth of 0.18 mm. In spite of the advantages, gas cyaniding is not being adequately used in industry owing to technological difficulties and due to the fact that available information is not adequately disseminated. Due to the relatively low process temperature (800 - 850 C), it is advisable to use for gas cyaniding medium carbon steels since for such steels, the temperature of the cyaniding process can be made equal to the hardening temperature, ensuring adequate hardening depth

Card 1/2

129-10-10/12

In industrial utilisation of gas cyaniding. (Cont.)

and strength after the hardening process. Practical problems of gas cyaniding are discussed on the basis of practical experience and some literary data. It is mentioned that cyanide hardened layers have a characteristic feature, namely, no excess cementite in the form of a lattice or grains was ever observed in the micro-structure, not even in cases in which the surrounding zone of the layer is strongly saturated with carbon. The author emphasises the importance of introduction on a wide scale of gas cyaniding.

There are 2 tables and 4 Slavic references.

ASSOCIATION: Gorki Automobile Works (Gorkovskiy Avtozavod)

AVAILABLE: Library of Congress

Card 2/2

STETSENKO, B.A.

Determining the size of the austenite grain by high-temperature gas  
cyanidation. Zav. lab. 23 no.3:326-327 '57. (MIRA 10:6)

1. Gor'kovskiy avtomobil'nyy zavod im. V.M. Molotova.  
(Austenite--Metallography)

AUTHOR: Stetsenko, B.A. SOV/113-58-2-12/15

TITLE: Increasing the Service Period of the Main Gear of a GAZ-63 Automobile (Povysheniye sroka sluzhby glavnoy peredachi avtomobilya GAZ-63)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 2, pp 40 - 42 (USSR)

ABSTRACT: The resistance to wear of gears is increased by using small-grained steel type 20KhNM. Several gears were tested on a special stand driven by a 90-kw electromotor at 940 rpm. Table 1 shows that the gears processed by carbonization in a solid carburizing agent lasted 3.5-37 hours on the stand, the majority being between 3.5-13.5 hours. Figure 1 shows the type of wear on the cogs of the tested gears. The results of the chemical analysis layer by layer are given in Table 2. A partial decarbonization of the carbonized layer and its saturation by nitrogen takes place during heating for tempering (Figure 2). The data of Table 2 shows that steel processed by gas carbonization has an increased

Card 1/2

SOV/113-58-2-12/15

Increasing the Service Period of the Main Gear of a GAZ-63 Automobile

bending resistance and resilience. There are 2 tables,  
2 graphs, 4 photos, and 3 Soviet references.

ASSOCIATION: Gor'kovskiy avtozavod (Gor'kiy Automobile Plant).

1. Gears--Life expectancy    2. Gears--Carbonization    3. Gears  
--Heat treatment    4. Gears--Testing equipment    5. Gears--Test  
results

Card 2/2

85201

S/129/60/000/011/012/016  
E073/E535

18.7100 exclude 2408

AUTHOR: Stetsenko, B. A., Engineer

TITLE: Increasing the Strength of Cyanided Steel

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,  
1960, No.11, pp. 46-47

TEXT: In view of the possibility of controlling the process of gas cyaniding, the author studied the influence on the strength of cyanided steel of feeding into the furnace kerosene and ammonia. For this purpose, the gears of the M-20 motor car gearbox, notch-free 10 x 10 x 55 mm impact test specimens and 10 x 12 x 80 mm bending test specimens were used. In testing for static bending the distance between the supports was 60 mm. For layer by layer chemical analysis of the cyanided layer, specimens of 35 mm diameter, 120 mm length were used, from each of which 3 to 4 batches of chips were taken, the thickness of the first batch being 0.05 mm and that of the subsequent ones being 0.10 mm. The specimens were subjected to gas cyaniding in a laboratory shaft furnace (300 mm diameter, 650 mm deep) at 815°C for 90 min with various speeds of feeding the kerosene and the ammonia. Following that, the gears and the specimens were quenched in oil and

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85201

S/129/60/000/011/012/016

E073/E535

### Increasing the Strength of Cyanided Steel

tempered at 200°C. Then, the bending strength of the gear teeth was tested by means of a press, breaking 3 to 4 teeth in each gear. The strength depended on the mechanical properties of the cyanided layer, since under all gas cyaniding regimes the temperature, the duration of the process and the method of quenching were identical. The results (which are tabulated and graphed) lead to the following conclusions:

- 1) The kerosene/ammonia ratio influences the contents of carbon and nitrogen in the cyanided layer and also the strength of the cyanided steel.
  - 2) The hardness of the cyanided surface is high enough and practically equal for all the gas cyaniding regimes tried in the experiments.
  - 3) The best combination of bending and impact strength is obtained under the regime No.5, which consists of feeding into the furnace 25 to 30 drops/min of kerosene, 2 l/min of ammonia. The speed of diffusion of carbon and nitrogen is relatively high; at a depth of 0.25 mm the layer contained 0.78% C and 0.25% N. This compared with 0.61-0.72% N and 0.02-0.16% N for specimens subjected to the other
- Card 2/3



85201

S/129/60/000/011/012/016  
E073/E535

Increasing the Strength of Cyanided Steel

regimes. At the surface the carbon concentration is near to its eutectoidal value. The bending strength was  $247 \text{ kg/mm}^2$  and the impact strength was 2.06 kgm. The breaking force of the teeth was 5075 kg. There are 1 figure and 1 table.

ASSOCIATION: Gor'kovskiy avtomobil'nyy zavod  
(Gor'kiy Automobile Works)

X

Card 3/3

88370  
S/129/61/000/001/012/013  
E073/E135

1.1710

AUTHOR: Stetsenko, B.A., Engineer  
TITLE: Application of Double Quenching  
PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,  
1961, No. 1, pp. 62-63

TEXT: The authors investigated the influence of double quenching on the strength properties of 40X (40Kh), 20XHM (20KhNM) and 18XHV (18KhNVA) steels. The strengths in static and dynamic tests were determined on 10 x 12 x 80 mm specimens. The distance between the supporting points in bend tests of prismatic specimens was 60 mm. The specimens were heat treated under shop conditions. The impact strengths of cyanided and of case hardened steels were determined on notch-free specimens. The bending strengths of gears were tested and these were also tested in rear axles and gear boxes of motor cars. The impact and bending strengths of all these steels increased considerably after double quenching. In the core and in the diffusion layer of the specimens the structure was fine grained; the quantity of residual austenite decreased considerably in the diffusion layer. For  
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S/129/61/000/001/012/013  
E073/E135

# Application of Double Quenching

verifying the effectiveness of double quenching, 7 gear blocks were quenched and 4 of these were quenched for a second time. These blocks as well as standard gears were used in gear boxes. The gears with the standard gears were subjected to shot peening. The results of stand fatigue tests of the gear boxes were as follows:

Torque, kgm		Service life (until teeth failure), hrs.	
Primary shaft	Secondary shaft	1 quenching	2 quenchings
22	39	78	48
22	39	65	16
22	39	65	11
22	39	-	8

The results show that the fatigue strength was considerably lower  
Card 2/3

88370

S/129/61/000/001/012/013  
E073/E135

### Application of Double Quenching

after double quenching. This is attributed to increased deformation of the gear teeth after repeated quenching which disturbs correct meshing. As a result of heat treatment of the rear axles the driven pinions suffered considerable deformation. The following conclusions were arrived at: 1) Double quenching increases the strength of steel; 2) For components that are not prone to considerable deformations during quenching, double quenching can be effective for increasing the strength and service life; 3) For components which suffer a high degree of deformation during the first quenching, a second quenching is not recommended.

There is 1 table.

ASSOCIATION: Gor'kovskiy avtomobil'nyy zavod  
(Gor'kiy Automobile Works)

Card 3/3

GLADKIKH, A.N., kand.tekhn.nauk; STETSENKO, B.A.; GITEL'SON, N.I.

Improving the quality of the steel used for cold upsetting.  
Stal' 21 no.8:758-761 Ag '61. (MIRA 14:9)

1. Gor'kovskiy politekhnicheskii institut i inzhenerno-tekhnologicheskii i nauchno-tekhnicheskii institut Gor'kovskogo sovetskogo narkhoza.

(Steel--Metallorgprahy) (Forging)

GLADKIKH, A.N.; STETSENKO, B.A.

Quality of steel for cold upsetting. Metallurg 8 no.7:29-30  
J1 '63. (MIRA 16:8)

1. Zavod "Krasnaya Etna."  
(Forging)

ACC NR: AP6018640 (A) SOURCE CODE: UR/0422/66/000/005/0087/0087

AUTHOR: Arone, R. G.; Balakina, I. A.; Bochkareva, A. I.; Stetsenko, B. A.; Sokolovskiy, P. I.

ORG: none

TITLE: A standard for low-alloy structural steel

SOURCE: Standarty i kachestvo, no. 5, 1966, 87

TOPIC TAGS: construction material, structural steel, alloy steel, welding evaluation, mechanical property / 16GS steel, 09G2S steel, 10G2S1 steel

ABSTRACT: A series of innovations in low-alloy structural steels (GOST 5058-65) based on recent work done at the Central Scientific Research Institute for Ferrous Metallurgy is described. Nineteen new grades of high strength low-alloy steel containing small amounts of carbide and nitride forming elements (Ti, V, Zr, Nb) were developed. Higher quality and performance are claimed for the new materials and suitable applications are recommended. The steels were melted in standard Martens furnaces and oxygen-converted. While the majority are used in the hot-rolled condition, they may be heat-treated to yield strengths of 40-50 kg/cm<sup>2</sup> with a saving of 20-30% in material. The heat-treated steels possess lower brittle fracture tendencies and slight aging sensitivity. Phosphorus and sulfur contents of the steels were maintained within strict limits (below

Cord 1/2

Category : USSR/Optics - Photometry, colorimetry, and illumination engineering

K-10

Abs Jour : Ref Zhur - Fizika, No 1, 1957 No 2613

Author : Kondilenko, I.I., Stetsenko, B.N.

Title : Luminescent Heterochromatic Photometry in the Ultraviolet

Orig Pub : Nauch. zap. Kyivs'k. in-ta, 1955, 14, No 8, 137-140

Abstract : L.N. Anan'yeva's and A.A. Shishlovskiy's method (Dokl. AN SSSR, 1937, 17, 183) for the measurement of the distribution of energy in the spectrum of a source of light in the UV region was modified and simplified. Instead of a luminescent plate, brought in contact with the photographic emulsion, the authors coated a layer of luminophor in the form of a viscous mass (mixture of 1.5 cc alcohol solution of Na salicylate with a concentration 0.5 g/cc and 3 cc of aqueous solution of agar-agar with a concentration 0.15 g/cc) directly on the photographic emulsion. After photographing the luminescence occurring when the photographic layer is illuminated by the investigated source in the spectrograph, the layer was washed off in warm water. This layer is suitable for accurate measurements only at  $\lambda > 210 \text{ m}\mu$ ; at smaller wavelengths there is some absorption of light by the agar-agar, which, however, does not prevent a qualitative study of the spectrum in this region. The energy distribution in the spectrum of the SVDSH-250 mercury lamp measured with the above method in the 248--365  $\text{m}\mu$  region is given.

Card : 1/1



L 28432-66 FBD/EWT(1)/EEC(k)-2/T/ENF(k) IJF(c) WG/GD

ACC NR: AT6015147

SOURCE CODE: UR/0000/66/000/000/0322/0326

AUTHOR: Yatsenko, A. F.; Kulyupin, Yu. A.; Stetsenko, B. V.

82  
B+1

ORG: Institute of Physics AN UkrSSR (Institut fiziki AN UkrSSR)

TITLE: Using lasers for studying the kinetics of photoelectric field emission

SOURCE: Respublikanskiy seminar po kvantovoy elektronike. Kvantovaya elektronika (Quantum electronics); trudy seminar. Kiev, Naukova dumka, 1966, 322-326

TOPIC TAGS: photoelectric effect, field emission, laser application, silicon, laser, pulse generator

ABSTRACT: A method is proposed for using a continuous-duty helium-neon laser to produce short intense light pulses. An example is given illustrating use of these light pulses for studying the kinetics of photoelectric field emission from high-resistance silicon. Two methods were used in this study: 1. measurement of the drop in photoelectric field emission under pulsed illumination, and 2. determination of the variable and constant components of field emission current under illumination by a sinusoidally modulated light. The short light pulses were produced by a mechanical system with a rotating prismatic mirror (see figure). The light source was an LAK-1 He-Ne laser ( $\lambda=6328 \text{ \AA}$ , power 100-300  $\mu\text{w}$ , divergence angle less than  $10'$ ). The installation gave a pulse duration of  $2 \cdot 10^{-7}$  sec with a 1 cm light spot at the pickup. The

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L 28432-66

ACC NR: AT6015147



Mechanical generator of short light pulses: 1--prismatic mirror;  
2--light source; 3--light receiver

distance between pulse generator and receiver may be increased by an order of magnitude and a long-focus lens may be used to reduce the spot diameter to 0.1 cm or less. These measures would make it possible to reduce the pulse duration to  $10^{-9}$  sec. The variable and constant component of photoelectric field emission produced by exposing an emitter to light modulated with a frequency of 4.6 Mc were measured to study the fast component of relaxation. The

modulating element was a KDP crystal placed between the laser and a polarization prism. A block diagram of the experimental installation is given. An attempt was made to establish the upper limit of frequencies which may be recorded by a photoelectric field emitter. The experiments yielded satisfactory agreement between calculated and observed frequencies although the photoelectric field emitter was not able to record a signal at 67 Mc, apparently due to imperfections in the method. Further attempts in this direction are being made. Orig. art. has: 3 figures. [14]

SUB CODE: 20/

SUBM DATE: 12Feb66/

ORIG REF: 002/

OTH REF: 008/

ATD PRESS: 5005

Card 2/2

L 23457-65 EWO(j)/EWA(k)/FBD/EWT(1)/EWP(o)/EWT(m)/EEC(k)-2/EEC(t)/T/EEC(b)-2/  
EWP(k)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Peb/Pi-4/P1-4 IJP(o) WG/WH

ACCESSION NR: AP5000631

S/0185/64/009/011/1267/1268

AUTHOR: Broude, V. L.; Pogoryslyy, O. M.; Soskin, M. S.; Statsenko, S. V.; Yatsenko, O. F.

TITLE: Radiation fluctuations of a pulsed laser

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 9, no. 11, 1964, 1267-1268

TOPIC TAGS: laser, pulsed laser, laser radiation intensity, ruby crystal, neodymium glass

ABSTRACT: An investigation is made of the relationship between the intensities of "spikes" radiated from two ends of a pulsed laser. A special laboratory setup was used for the measurement of laser radiation. The measurements consisted in photographing the flashes from both ends of the crystal. The intensities of "spikes" were measured (with an accuracy of 5-10%) and their ratios calculated. The ratios of radiation intensities from two resonator ends for different "spikes" within the same flash differed by as much as 20 to 40 percent. Other regularities, such as the dependence of

Card 1/2

L 23457-65

ACCESSION NR: AP5000631

scattering on intensity and the moment of "spike" radiation within the flash were not observed. Noncorrelation of laser radiation intensity with ruby crystal and neodymium glass in the case of dielectric mirrors with a reflection coefficient close to 100 percent was approximately identical. Scattering decreases when pumping is increased above the threshold. Orig. art. has: 2 figures. [KM]

ASSOCIATION: Instytut fizyky AN URSR, Kiev. (Institute of Physics, AN UKrSSR)

SUBMITTED: 25 Jun 64

ENCL: 00

SUB CODE: EC

NO REF SOV: 005

OTHER: 001

ATD PRESS: 3174

Cord .2/2

SIST. NK, G., illus.

Testing front-faced cultivator weeps in the zone served by the  
Machinery Experimental Station. Trakt. 1 sel'khozmasht.  
r. 1:04 Ja '66. (MIS)

1. Zarobkaya mashinospytatel'naya stantsiya.

STETSENKO, G.I., inzh.

Investigating cornob cleaners. Trakt. i sel'khoz mash. 33 no.12:  
33 D '63. (MIRA 17:2)

1. Kazanskaya mashinolspytatel'naya stantsiya.

STETSENKO, G. P.

F. K. Borisovich reviewed an article by G. P. Stetsenko, "On the Problem of the Therapy and Prophylaxis of Fowl Plague," in which he states that for treatment of chicken ill with plague, and for prophylaxis of this illness, the author (Stetsenko) tested a number of preparations, such as: camphor serum (according to I. I. Kadykov) in 0.5 - 2 cc dose.

SO: Veterinariya; Vol. 23; No. 8-9; 16/18; August/September 1946 Unclassified.  
Trans. #312 by L. Lulich

Результаты исследования. *Candida albicans*. *Veterinariia* 56 no.8:  
(MIA 12:11)

1. Zavolozhchik Kh. I. Institut gosudarstvennoy vethaklaboratoriyey,  
Vladivostok, Ussr.

(Poultry--Diseases and pests)



STETSENKO, G.Ye., kandidat tekhnicheskikh nauk.

Grinding the conical slide block plunger. Zhel.der.transp. 37  
no.10:71-72 0 '55. (MLRA 9:1)

(Locomotives--Valve-gears)

GUBERNATOROVA, V.D.; IGNATOVSKAYA, L.I.; ~~CHERNYKH~~ N. L.N.; STETSENKO, I.A.  
(Ryazan')

Diagnostic importance of the antihyaluronidase titer in  
rheumatic fever. Nauch. trudy Riaz. med. inst. 14:222-227 '63.  
(MIRA 17:5)

PANASENKO, G.P.; PRYANISHNIKOV, V.Ye.; STETSSENKO, I.P.; CHOPIKASHVILI, M.A.

Some test results of cast core bits. ~~Razved.~~ 1 okh.nedr 28  
no.3:22-26 Mr '62. (MIRA 15:4)

1. Volgo-Donskoye geologicheskoye upravleniye.  
(Boring machinery--Testing)

PROCESSES AND PROPERTIES INDEX

27

Substitutes for fats in soap factories. 1. P. Sistrunk. *Fishbeys Prom.* 1, No. 3, 19 21(1941). - The possibility of using such substitutes for fats as alk. sulfate, salts of ligninsulfonic acids, fatty acids from the petroleum industry, and other by-products is discussed. S. Gottlieb

410-354 METALLURGICAL LITERATURE CLASSIFICATION

1. TETSEKHO, I.P., Eng.
2. USSR (600)
4. Oils and Fats
7. Problem of breaking down fats with high initial acidity.  
Masl. zhir. prom. 17. no. 7. 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

STETSENKO, L. P.

STETSENKO, L. P.; NIKOLAI, L. L.

Prerogative of the State

Using prerogative transportation in the production of toilet soap. Nikol. -uncl.  
prer. 11, No. 3, 1959.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

SHITSSENKO, I.P.; SHTERN, R.M.

Producing glycerol without using a reagent. Masl.-zhir.prom.  
20 no.1:15-19 '55. (MLRA 8:3)

1. Nevskiy mylovarennyy zavod.  
(Glycerol)

STETSENKO, I.P., inzh.; MIRONOV, B.A.

Screw press for toilet soap. Masl.-zhir. prom. 24 no.10:  
39-41 '58. (MIRA 11:10)

1. Novskiy mylovarennyy zavod.  
(Power presses) (Soap)



STETSENKO, M., inzh.

Small universal feed mill. Tekh. v sel'khoz. 20 no.6:35-36 Je '60.  
(MIRA 13:10)

(Feed mills)

STETSSENKO, M.

Fire-proof casing of combustion chambers in dryer furnaces of  
corn-processing plants. Muk.-elev. prom. 26 no.6:19-20 Je '60.  
(MIRA 13:12)

1. Tekhnicheskoye upravleniye Ministerstva khleboproduktov RSFSR.  
(Furnaces) (Corn (Maize)--Drying)

STETSENKO, M., INZH.

Disk feeder for slow-flowing materials. Muk.-elev. prom.  
26 no. 12:16-17 D '60. (MIRA 13:12)

1. Ministerstvo khleboproduktov RSFSR.  
(Feed mills)

STETSENKO, M., inzh

Stamp for labeling paper bags. Muk.-elev. prom. 27 no.7:13 J1 '61.  
(MIRA 14:7)

1. Tekhnicheskoye upravleniye Ministerstva zagotovok RSFSR.  
(Marking devices)

STETSENKO, M.A.; PAL'MIN, B.A., kand.ekonom.nauk, otv.red.; ITS KOVSKIY,  
M.B., red.isd-va; GOR'KOVAYA, Z.P., tekhn.red.

[Combining farming branches on cotton-growing collective farms]  
Sochetanie otraslei v khlopkoseiushchikh kolkhozakh. Tashkent,  
Izd-vo Akad.nauk Uzb.SSR, 1959. 156 p. (MIRA 12:7)  
(Uzbekistan--Cotton growing)

STETSSENKO, M.D.

Effect of rectilinear impulses of rectified current on the central nervous system in dogs. Fiziol.zhur. [Ukr.] 1 no.2:30-37 Mr-Apr '55.

1. Institut fiziologii imeni akademika O.O.Bogomol'tsya Akademii nauk URSS.

(ELECTRIC ANESTHESIA)

(ELECTROPEYSIOLOGY)

(NERVOUS SYSTEM)

USSR/Human and Animal Physiology - The Nervous System.

T

Abstr Jour : Ref Zhur Biol., No 3, 1959, 13150

Author : Stetsenko, M.D.

Inst : -

Title : Changes in the Temperature of the Brain with Application of Alternate and Direct Currents as Compared to the Effect of Some Pharmacological Agents.

Orig Pub : Fiziol. zh., 1957, 3, No 6, 91-101

Abstract : When the brain cortex of rabbits was stimulated by means of electrodes forced into the frontal and occipital regions, three types of temperature changes were observed in the brain with alternate currents of 10, 40, and 100 impulses/second: cooling, heating, or cooling followed by heating. With the action of a current of 100 impulses/second in 70% of the experiments sleep was induced by electricity, and the condition was accompanied by an elevated temperature of the brain. This reaction

Card 1/2

USSR/Human and Animal Physiology - The Nervous System.

T

Abs Jour : Ref Zhur Biol., No 3, 1959, 13150

explains the stimulation of the hypothalamic region. Thermal reactions of the brain rose with reduced frequency of the current and prolongation of each impulse. Direct current influenced the temperature of the brain to a lesser degree. With the action of phenamine parallel phase changes were noted in the temperature of the brain and the body. Chloral hydrate caused a lowering of the brain temperature, and the effect of morphine was varied in different experiments. It is suggested that a connection exists between stimulation and inhibition and the changes in the brain temperature, and that it can have a mosaic and phase character. -- K.S. Ratner

Card 2/2

- 94 -



KRUPSKIY, N.K.; ALEKSANDROVA, A.M.; STETSENKO, M.V.

Determination of chlorine ion in cloudy and colored soil extracts.  
Pochvovedenie no.2:109-113 F '62. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut pochvovedeniya.  
(Soils--Chlorine content)

SECRET, A. A.

133-10-23/26

AUTHOR: Yulin, S. I., and Stetsenko, N. A. Engineers.

TITLE: The Influence of the Reduction Rate on Destruction of Carbide Lattice in the X12 and X12 $\phi$  Steels.  
(Vliyaniye Stepeni Ukovki Na Razrusheniye Karbidnoy Setki v Stalyakh X12 i X12 $\phi$ .)

PERIODICAL: Stal', 1957, No.10, pp. 948-950 (USSR).

ABSTRACT: During forging of ingots of X12 and X12 $\phi$ 1 steels of 300 and 500 kg in weight into rounds 40-180 mm and strip 60 x 300 x 180 mm, a network of eutectic carbides appeared. Causes of this phenomenon were investigated. It was found that the distribution of carbides in ingots of the above two steels along the radius of a cross-section of an ingot is independent from the weight of the ingot. In cast ingot metal the network of eutectic carbides increases from the surface towards the centre. Cast structure of X12 steel has a coarser eutectic carbide network than that of X12 $\phi$ 1 steel (for ingots of the same weight). Hot mechanical working (forging) destroys the brittle network of eutectic carbides, but does not make the distribution of carbides in a cross-section more uniform. In the centre of forgings coarser grains with coarsely precipitated carbides on their boundaries are formed. Therefore, remains of

Card 1/2the broken carbide network can be preserved there. An

133-10-23/26

The Influence of the Reduction Rate on Destruction of Carbide  
(Cont.)

increase in the ingot diameter (and thus of weight), permits increasing the degree of reduction on obtaining forgings of the same diameter and thus to attain a higher degree of destruction of the network. There are 5 figures.

ASSOCIATION: Dneprospetsstal' Works. (Zavod Dneprospetsstal').

AVAILABLE: Library of Congress

Card 2/2

3

S/032/61/C27/004/006/028  
B110/B215

AUTHORS: Shul'te, Yu. A., Garevskikh, I. A., Maksimenko, V. D.,  
Leybenzon, S. A., Prantsov, V. P., Smolyakov, V. P., and  
Stetsenko, N. A.

TITLE: Scale for estimating nonmetallic inclusions in electro-  
scoriaceous steel

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 4, 1961, 422-424

TEXT: A high-purity metal is obtained by the electroscoriaceous method  
of melting. Inclusions in electroscoriaceous steel differ from those in  
ordinary steel in kind and character of their distribution. Traditional  
scales, therefore, cannot be used for the correct estimation of  
impurities, especially oxidic inclusions. The examination of nonmetallic  
inclusions in a large number of melts of electroscoriaceous steel allowed  
the development of a new scale (Fig.) in which the total area of dis-  
oriented inclusions, their number within the field of vision, and the  
adequate dimensions of the individual inclusions are taken into account  
(Table 1). Oxidic and sulfidic inclusions are shown in the photographs  
Cord 1/8

Scale for estimating nonmetallic...

3/032/61/027/004/008/028  
2110/2215

of the new scale. Large globular, oxidic inclusions are measured with an eyepiece micrometer. The degree of impurities in the ground face is estimated according to the field of vision with the largest number of impurities. The authors tested the scale and controlled 662 specimens of 200 electrocoriaceous melts of ball-bearing steel types  $\text{UX}15$  (ShKh 15) and  $\text{UX15CP}$  (ShKh 15SG). At the same time, the specimen was estimated by the traditional ГОСТ 801-47 (GOST 801-47) scale (Table 2). The indices of estimation by both scales differed but slightly, although the estimations of the individual melts differed largely from the control. Examinations of nonmetallic inclusions showed that the scale can also be used for other steels melted out by the electrocoriaceous method and for estimating melts in the vacuum are containing the same type of inclusions. Ye. I. Boyko's collaboration is mentioned. [Abstracter's note: Complete translation]. There are 1 figure, 2 tables, and 2 Soviet-bloc references.

ASSOCIATION: Zaporozhskiy mashinostroitel'nyy institut (Zaporozh'ye Machine-building Institute); named "Dnepropetrestal'" ("Dnepropetrestal'" Plant)

Card-B4

L 63975-65 EIT(m)/EIP(a)/EIP(b)/EWA(d)/EIP(t) NJW/JD

ACCESSION NR: AP5014242

UR/0383/65/000/002/0024/0026  
669.137.6

AUTHOR: Zabaluyev, Yu. I.; Smolyakov, V. F.; Vul'fovich, M. S.; Kaganovskiy, G. P.;  
Stetsenko, N. A.; Yemel'yanenko, Yu. G.; Medovar, B. I. (Doctor of technical  
sciences); Latash, Yu. V. (Candidate of technical sciences)

TITLE: Improving the macrostructure of electrosag steels

SOURCE: Metallurgicheskaya i gornorudnaya promyshlennost', no. 2, 1965, 24-26

TOPIC TAGS: electrosag melting, steel

ABSTRACT: Crystallization bands (layers)--regions which are more resistant to etch-  
ing than the base metal--are observed in the macrostructure of ball bearing and  
structural steels melted by the electrosag method using ANF-6 flux. In the ingot,  
these layers reproduce the contour of the bottom of the metal bath, and in rolled  
products they appear as rings. These crystallization layers are caused by sharp  
changes in the rate at which the crystallization front advances due to disturbance  
of the thermal balance between the metal and slag baths. The authors studied the  
effect of substituting AN-291 flux for ANF-6. 12Kh2N4A, 18Kh2N4A, ShKh15, ShKh15SG

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ACCESSION NR: AP5014242

and 30KhGSNA steels were melted. The working current was reduced by 15-20% and rate of flux consumption was increased by 15-25% over that of ANF-6. The macro-structure of forged and rolled specimens (circular and square, 100-150 mm) was dense and uniform without traces of layered crystallization. Contamination by nonmetallic inclusions is about the same with both fluxes. The elimination of the crystallization layers when AN-291 flux is used is due to the higher electrical resistance of this flux which makes hotter smelting possible, increasing the heat content (enthalpy) and consequently the thermal inertia of the melting zone. This effect acts as a "choke" which smooths out fluctuations in electrical conditions and results in a more uniform ingot. Orig. art. has: 2 figures, 3 tables.

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